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Anti-inßammatory medication following cataract surgery: a randomized trial between preservative-free dexamethasone, diclofenac and their combination

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ABSTRACT.
Purpose: To examine the anti-inßammatory e cacy and tolerance between preservative-free dexamethasone (DEX) and diclofenac (DICL) eye drops, and their combination following cataract surgery.
Methods: A randomized, double-blind, prospective single-centre study with 189 eyes of 180 patients undergoing routine cataract surgery. Laser ßare meter measurement and spectral-domain optical coherence tomography imaging were conducted before surgery and at the 28-day postoperative visit. Clinical characteristics, surgical parameters and assessment of postoperative symptoms were recorded.
Results: Preoperative ßare was 9.0 0.6 pu/ms and central retinal thickness (CRT) 269.6 1.9 lm (mean SEM). On day 28, ßare was 22.1 2.9 pu/ms for DEX, 17.4 2.5 pu/ms for DICL and 13.0 1.6 pu/ms ($p < 0.05$) for their combination. Central retinal thickness (CRT) increase was 31.5 8.8 lm for DEX, 6.0 0.8 lm ($p = 0.001$) for DICL, and 3.5 0.5 lm ($p < 0.001$) for their combination. The incidence of ocular symptoms related to the eye drops was 11% for DEX, 37% for DICL and 34% for their combination ($p < 0.001$). Clinically signi cant pseudophakic cystoid macular oedema (PCME) was observed in seven eyes which were all treated with DEX ($p < 0.001$).
Conclusion: Diclofenac (DICL), as well as the combination of DEX and DICL, were superior to DEX monotherapy in minimizing CRT change and the incidence of PCME. Combination medication showed no added value compared to DICL monotherapy in uneventful cataract surgery.

Key words: aqueous ßare – cataract – central retinal thickness – dexamethasone – diclofenac – nonsteroidal anti-inßammatory drug – phacoemulsiÞcation – pseudophakic cystoid macular oedema

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Introduction

Postoperative management of cataract surgery has been a topic of discussion for a decade. The main interest revolves around the question whether the choice between topical corticosteroids or nonsteroidal anti-inßammatory drug (NSAID) a ects postoperative inßammation or the risk of developing pseudophakic cystoid macular oedema (PCME; also, known as Irvine–Gass syndrome), and whether the choice has an impact on the speed of visual recovery and acuity gain. In addition, concerns of drug tolerability di erences between NSAIDs and corticosteroids have emerged (Duong et al. 2014; Kessel et al. 2014; Kim et al. 2015; Cardascia et al. 2016; Coassin et al. 2016; Grzybowski et al. 2016; Lim et al. 2016; Malik et al. 2016; Duan et al. 2017; Pollack et al. 2017).

The measurement of aqueous ßare, using automated laser ßare metering technology, has enabled objective evaluation of anterior chamber reaction for postoperative inßammation. Excess sterile intraocular postoperative inßammation and breakdown of the blood–retinal barrier as marked by aqueous ßare have been shown to be connected with the risk for PCME (Ersoy et al. 2013). Widespread use of optical coherence tomography (OCT) has facilitated